

April 4, 2013  
CAL FIRE / FRAP

## **FRASC Wildfire Meeting Summary**

### **Attendees**

Dave Bakke (USFS), Russ Henly (CALFIRE), Tony Mediati (CALFIRE), Doug Wickizer (CALFIRE), Jim Spero (CALFIRE), Chris Dicus (Cal Poly), Rich Walker (CALFIRE), Justin Johnson (CALFIRE), Dave Sapsis (CALFIRE), Chris Keithley (CALFIRE), Dave Passovoy (CALFIRE), Klaus Scott (ARB), Mary Klaas-Schultz (CALFIRE), Mark Rosenberg (CALFIRE), Jon Keeley (UCLA/USGS), Scott Stephens (UC Berkeley), John Buckley (CSERC), Jerry Bird (USFS), Bruce Goines (USFS), Rebecca Ferkovich (CALFIRE), Tiffany Meyer (CALFIRE), Fraser Shilling (UCD), Jim Suero (State Parks), Chuck Jacquins (BIA), Greg Suba (CNPS), Hugh Safford (USFS), and Jim Quinn (UCD-ICE).

### **Webinar Attendees:**

Garin Hirath (CALFIRE), Mark Wentzel (CAL EPA), Nick Enstice (Sierra Conservancy), Nic Kunz, Stacy Heaton (RCRC), Suzanne Lang (CALFIRE), Issac Oshima (CALFIRE), James Rosen, Kristen Podolac (TNC), Phyllis Banducci (CALFIRE), Dean Cromwell (CALFIRE), Alexandra Placard, Dan Turner (Cal Poly), Sue Britting (Sierra Legacy), and Cecelia Kutcher.

### **Agenda**

**9:00 - 9:20: Introduction and Overview**

**9:20 - 10:35: Panel Speaker Presentations and Questions**

- Chris Dicus (Research Scientist, Department of Natural Resources Management and Environmental Sciences, Cal Poly San Luis Obispo)
- Jon Keeley (Research Ecologist with the U.S. Geological Survey and Adjunct Full Professor, Dept. of Ecology and Evolutionary Biology, UCLA)
- Scott Stephens (Professor of Fire Sciences, U C Berkeley College of Natural Resources)

**10:35 - 10:45: Break**

**10:45 - 11:30: Group Discussion**

- Predicting fire intervals and use of historical fire data
- Climate change and temperature impact on fire variability.
- Adaptive Management Strategies
- Land use and policy decisions (capabilities and limits)

**11:30 - 11:50: Criteria and Indicators**

- Frazier Schilling

**11:45 - 12:00: Recap**

- Summary - review of meeting discussions; next steps
- Questions and comments, next steps
- Next FRASC meeting date and topic

### **I. Introductions and Overview**

Rich Walker started with introductions and an overview presentation of the wildfire chapter from the 2010 Assessment was presented by Dave Sapsis.

- Overview Of Wildfire Threat to Ecosystems in the 2010 Assessment:
  - *California is a complex wildfire-prone and fire adapted landscape.*

- *Historical trend shows increased trend in fire, with some areas burning several times.*
- *Logistic model indicates upward trend in burned acreage, supported by 5 of the 7 largest fire years in the last 60 years have occurred in last decade.*
- *High variability in burned acres, and by vegetation type.*
- *Strong increase in burn rated in forested land in the last decade, other fuels types are more static.*
- *Wildfire poses significant risk to life, public health, infrastructure/property, and natural resources.*

In 2010 assessment, wildfire was examined as a threat to ecosystem health and community wellbeing. Our analysis included three specific topics that were evaluated on threats and assets to identify priority areas. These three analyses included the following:

- 1) Preventing wildfire threats to maintain ecosystem health
- 2) Restoring wildfire impacted areas to maintain ecosystem health
- 3) Preventing wildfire threats for community safety

## II. Panelist Presentations

### Dr. Chris Dicus (California Polytechnic State University)

- CA has a complex fire landscape.
  - Over-generalizations are hard to use for such diversity
  - Different challenges and strategies to apply to these areas
  - WUI offers additional challenges
  - Some problems are fuels, some exposure
  - We need to get out of our own silos and look at the aggregate issues (water, air, etc.)
  - Need better collaboration at agency level to work across multiple purposes and address aggregate issues.
  - Take all considerations and recognize the place and time based differences.
- Background in fire - hot shot crew. Fire ecology and forestry back ground. He is able to help us look at the fire problem from diff perspectives.

### Dr. Jon Keeley (U.S Geological Survey and University California, Los Angeles)

- Level of spatial variation in state in terms of fire history should play a role in the strategy development.
  - Cause of these patterns are varied, some are topographic
  - Patterns - examined by agency
    - CAL FIRE has lower elevation fires that are dominated by humans and non-forested

- USFS fires are dominated by conifer forest and less impacted by human development
- Differences in pattern in two datasets (CAL FIRE vs. USFS)
  - USFS shows increase in burning in conifer
  - CAL FIRE does not see the increase in recent decades in acres burned.
  - Decadal burning in CA in CAL FIRE regions
    - Most regions show similar trends. Records show a peak in 1920's and declining to 1950's.
    - Southern CA has some increases.
    - Different landscapes have different fire histories and patterns.
  - Role of climate change may also be different in these two owner/protection responsibilities
  - Role of climate. Signal seen on USFS Lands
    - Annual variation of area burned, compared to temperatures.
    - Increase in area burned in spring season and may be a result of increased spring temperature, lower snow pack and resultant increased acres burned.
  - CAL FIRE landscape shows little variation in acres burned when compared to temperature.

Dr. Scott Stephens (University of California, Berkeley)

- Trends in fire in CA - 2007 paper - looked at past fire history
  - Mojave is a big unknown
  - Of the 75 million non-desert acres, 6% burned
  - 1.8 % burned in CA in recent decades (2008)
  - CA is the Pyro state
  - Fire is an important component of ecosystems
- Optimistic about treatment acres trends in CA (increasing)
  - All treatments for restoration (fire, mechanical, prescribe fire - 18%<sup>+</sup> of areas getting hazard reduction when combined).
  - 60% of the land base will still be untreated in USFS Sierra Nevada area
  - This is a train wreck - with a changing climate regime.
  - Optimistic because the pace and scale of treatment is increasing
  - We can change the trend; add more fire as appropriate in certain ecosystems. This is going to be increasingly important
  - We have an opportunity to change the trajectory of fire in forest ecosystems
  - Our legacy will be established with our help or without. Our children's children will wonder why we did nothing

### III. Moderated Discussion

- **Fire Regime Question:** There is disagreement about the functional role of high-intensity/high severity fire in Yellow Pine/Mixed Conifer ecosystems and whether the paradigm of frequent, low severity fire supporting stand structures of “open and park-like” stands (that is, few large trees, and mixed -cohorts of understory trees in varying degrees of abundance) is representative. In your view, what is the natural role of high severity fire in YP/MC, and given that, what are the implications on how we address managing these forests in terms of both fuels and forest structure.

→ Jon Keeley:

- All may be potentially natural but, the issue is the number of acres burned in each of these severity categories in Yellow Pine forest
- Good reason to conclude the yellow pine did have grassy understory in history and mixed conifer forest did not have a grassy understory.
  - Also, YP/MC distinction - Tom Swetnum (sp?) shows a lag effect in fire after high rainfall amounts in previous years driven by a flush of grass - in yellow pine, but not in mixed conifer lands.

→ Scott Stephens:

- This topic has been evolving - previously we would have characterized this system of yellow pine as a low severity, but it is now is thought of as a mix of severities.
- We need to consider how it is distributed:
  - Yosemite analysis with nested plot
  - What is the patchiness in forests there?
  - Finding is little evidence of high severity fire
  - Surprising result.
- Brandon Collins pub on the Illilouette Creek basin in Yosemite.
  - Managed wildfire used as a tool.
  - Previously fire suppression was the norm, till 1970's (100 years of suppression).
  - In 1974 they started reintroducing fire into this system - can teach us about how to restore these types of landscapes.
  - When 2 large fires occurred in the 70's, 15% of the area burned at high severity, but mostly patchy (5 acres up to 60 Acres)
  - Contemporary median patch size.
  - Majority at 1-hectare scale.
- Contrast with recent fires
  - High severity patches in the 1,000's of acres

- Is this normal? Is this seen in the historical record? Some, but certainly it was rare.
- It can be an important component, but should be a small percent of the total burned acres.

→ Chris Dicus:

- Agree with other panelists; causes are often attributed to changes in forest structures.
- We are good at putting out fires on a normal bad day and are making choices as a society - most acreage is now burned on very bad fire weather days (as we cannot control or put them out).
- “Let burn” policies done as a management policy, but may not be appropriate management on all lands

→ Dave Sapsis:

- Summarized the comments from panelists:
  - Context matters. Broad group makes a case for high severity fire in mixed conifer ecosystems, but this may not be the same implications for CA MC forests. Rockies, etc. research
  - Fire Suppression is having a big impact because we are excluding the low severity fires by putting them out and only letting large fires burn, and this is a problem.

→ Audience Questions and response:

- *(Keithley): Given the elasticity of fire regimes, can the State develop targets of fire and behavior for different regions of the state. Is this practical or helpful?*

— Panel response:

→ Keeley:

- Yes - if you look across the state, there is CA and then Southern CA. These will require very different approaches.
- Conifer forest fire suppression has focused on exclusion.
- In SO CAL shrub systems this has not been possible.

→ Stephens:

- Too much fire causing type changes and degradation at the bottom of the hill (chapparral areas)
- At the tops of hill, conifer forests have a fire deficit.
- Need to consider what is a desirable range of fire and suppression in CA and where it is needed?
- Bigger window of variation would be better and have positive outcomes.

- With climate change, this strategy will help us adapt to broader window of outcomes.
- Dicus: Agrees, but difficult to be too prescriptive.
- Sapsis: idea of fire regime interval departure
  - Management implication but also some idea of liability. Describe the distribution and recognize there is area in the tails of that dist.
  - Currently in a go loop with acres burning too much in some systems and type conversion is a problem and all exacerbated by invasive species.
  - We still struggle with appropriate actions.
  - Fire emergency creates a sense of urgency even if the outcomes would be desirable.
- *Klaus Scott question regarding fire surrogate. What are the ecological implications of harm from fuel treatments?*
  - Panel response:
    - Stephens suggests there hasn't been much evidence of harm from these treatments.
    - One impact was increase in non-native plants
    - We do have an opportunity to use fuel treatments and mechanical methods and burning as a strategy to increase ecosystem health and resilience
  - *Jon Buckley question/comment: Has seen fire outside the natural range of variability. This is causing watershed issues, wildlife issues, etc. Despite the USFS and management efforts, there is a big gap between what is treated and what needs to be treated. Question - How can we as a group lead to policies that address the scale of this gap and try to close it?*
    - Not just scale, but how to be strategic with these treatments. Idea - use wildfire (natural) to get bonus acres 0- fire use angle.
    - Private lands may not be able to use this strategy, but we can use fuel treatments to address this.
- **Climate Change Question:** Recent research indicates that climate change trends will result in an increase of fire activity and intensity due to changes in fuel conditions and fire weather. What types of fire and land management policies are appropriate for maintaining healthy forests and reducing fire risk to communities under these potentially evolving conditions?
  - Dicus: Everyone thinks we will have more fire. This is a complex question.
  - Keeley: Fire climate relationship is more complex than what we have recognized. What will be the real impact of climate be on fire activity? If temperature is the controller, it would be expected to track number of acres compared to

temperature and provide predictability, but this research is not as strong as you would think.

- We need more work to understand these relationships because lots of assumptions don't hold up.
  - Some think the differences may be due to management response.
  - Confine constrain, control fires on pvt., but not as aggressive on FS lands.
- Wind patterns is also a confounding factor due to the importance and influence of wind and this may not been well documented in the models.
- *Question from Keithley: Given limitations of predictions under future climate, should we look to historic patterns more? What tools do we have?*
- Jon Keeley: Can make assumptions about what the changes will look like and model them, but this assumes climate is the sole driver. There are other factors - not just temp
  - Scott Stephens. History is good to look at, but looking to future range of variation needs to be factored in.
  - Managers should be able to decide what is desirable and finding a way to head in that direction.
  - Hugh Safford: The value of history is that patterns are based on time scales longer than human lifetimes. This is useful to look at mechanisms and how things work. We need to use the historical record.
    - So the key is how we use this info. We can't be so docile; we need to examine not just pattern but processes in how we arrived at that pattern (it is easier to manage for pattern, than process), but we need to manage for process if we are to get to the desired future conditions.
    - All of these tools are in our hands and we can have a big impact, bigger than we think, but perhaps on time scales larger than a human life time
    - Managers are just getting use to the idea of using history to guide the future. They are looking to history for how we might manage for the future.
    - In yellow pine systems historical pattern can be a waypoint along the way, it may not represent the 'end condition', it needs to continue to have management decisions on it.
    - Even if fire is going to be more frequent, we need to integrate fire management with natural resource management.
  - Frasier Shilling: Flooding example. Nashville - the ideas was to get people out of harm's way, was a basic strategy. Remove people and infrastructure was the strategy. Also, changing the nature of the infrastructure.

- **Chaparral Question:** Given the large and increasing population, and associated ignition sources, with their homes in close proximity to chaparral, and given chaparral's sensitivity to high frequency of fire, how would you manage both people and the environment to maintain the health of both?

→ Keeley:

- Move out of the hazard areas.
- 100 years of experience shows fire management has decreased risk and hazards to homes. There is always potential for escapes and one good approach is to move people out, or use zoning to guide where homes are going. These homes are at risk due to the proximity of fire threat, and we continue to build out these areas and we need to consider limiting where this occurs. We can use different build out patterns.
- We may have reached the limit of effectiveness in response times and other suppression tools. We should be using fire zoning.
- Just because it is locally controlled doesn't mean it should stay that way.

→ Dicus:

- What is the given problem? Identify that and then solve it.
- We need a balance and these hazard reduction tools focused on people is ok, and effective.
- Suggests we emphasize the protection of community infrastructure because the impact to society is bigger than if a house burns down. Understanding that we will have losses.
- Australian strategy to stay and defend - these might be the safest ways to keep people safe from harm.
- Understanding that we will have losses. Accept it.
- Old construction doesn't meet current building standards and these are going to be subject to losses. There is normal bad day and really bad days.

→ Jon Keeley:

- Scaling Cal Fire hazard maps across the state point to bad areas at a broad scale - localized regions, the FHSZ product is not as helpful at telling us which houses will burn, specifically. There are other factors to look at in local areas that can be used to refine our notion of where we would get house loss.
- These are different scale analyses. And there is a lot of effect of location on susceptibility.

- **Public Perception Question:** Is there room for changing broad public perception regarding living in fire prone environments? Are there caveats or constraints on manifesting risk reduction driven by a public relations problem? What other factors constrain the attempt to adequately mitigate wildfire risk in California?
  - Fire is as natural as rain - is this communication a problem of simplifying the issue.
  - Comment from Clay Brandow: new subdivisions are designed to handle debris after fire and old ones are not. This is an adaptation. Thus we are communicating in some ways. i.e. building codes (local jurisdiction).
  - WUI question and mitigation strategies - for fast, high severity fires. The front edge is not easily controlled by our suppression resources.

#### IV. Group Discussion:

*Question from Dave Passovoy:*

- *Do you think it is worth society time to demand homeowners in SOCAL chaparral retrofit existing homes to save lives property and government taxes?*
  - Chris Dicus: Idea of regulation in this area is scary. This is not a good course for CA, unless it is new construction or an upgrade that requires you to meet the new standards. We cannot ask current homeowners to pay and implement upgrades.
- *Question rephrase from Dave Passovoy: Would it be better for government to subsidize retrofit instead of doing fuel treatment? Can we subsidize a roof retrofit?*
  - As a strategy for FEMA it could be wise. Also this will help fire fighters stay safer and do better and this could have a positive impact in many ways.
  - Scott Stephens: Australian example - interface inhabitants need to be aware of their surroundings and be prepared. Community fire brigade example - these can be very helpful for local responsibilities. In CA we only tell folks about evacuation and prevention, but then we will come in and save your home. In Australia they are better at getting the community to take responsibility for their risk.
  - Jon Keeley: We need to think from the house outward, and make sure the asset is able to withstand exposure. The role of landscaping is important. Research shows that if you have a tree hanging over your house during a wildfire, the tree will survive, but litter accumulation on roofs can often ignite the house and is a problem. "Remove the roof litter" is a simple message that can provide a greater chance to reduce risk.
  - There are political problems - for instance, legislating home construction changes was viewed as bad because of the impact on construction industry is unpalatable to many.

## Other Comments on Policy and Planning Issues:

- Dave Sapsis: Insurance risk assessments are documenting lower losses in fire wise communities. Possibly due to the type of community awareness that helps implement the suite of activities that address the susceptibility of communities. Can we leverage the market place to address this?
- Chris Dicus: An example is Rancho Sante Fe - Wealthy communities had marketed themselves as 'shelter in place' communities. Also, regulations about setbacks and landscaping. After the 2007 fires we saw differences in survival rates associated with six new codes. These are sound investments.
- Jon Keeley: Shelter in place has a role to play in some situations. But we are not convinced in SOCAL that it would be a good strategy. Embers can reach past defensible space.
- Hugh Safford: Another example is the Angora fire.
- Frasier Shilling: Change scale and, from point of the assessment, and how models can be used to address many of these questions. Future variability and models and use of such in policy and decision making... the struggle is to handle variability in legislation and policy....how do we do this (assumed we need it). There is a tendency for the policy to be prescriptive and rigid.
  - Jon Keeley: There has been more research to look at urban patterns etc. (different scale). May be able to predict more in the future.
  - Outcomes are variable and we have to recognize these losses can happen and not come down too hard on fire managers who make decisions about fire control and use. Politics have to recognize this and allow for it.
  - The NEPA process does not allow for enough variation in outcomes.
  - Hugh Safford: re: the NEPA comment. NEPA doesn't exclude the variability of outcomes. But there is a lot of risk in making these decisions, and they used to get 'backed' up by management but not so much recently. Adhere to decision process not decision outcome will help address the liability and politics issues. Recognize there are unpredictable outcomes and if we use the correct decision process (these are wildlands). If you follow the correct process it should be acceptable risk.
- How does this discussion inform the Assessment?
  - Jon Buckley. No simple answers, but we have a rich basis of knowledge and we can readily recognize that the buildup of fuels can still be a problem. We need to simplify this message to policy makers.
    - Example: build out in high fire areas. This drives fire protection to structure protection and leaves the wildland unprotected. Can the state mandate to counties that restrict new development in high fire threat areas? This assessment can drive that
    - Crisis need for state and fed to increase scale of hazard reduction projects. Lack of to all such is all talk

- If the assessment can address the message of agency to allow use of fire as a tool on private lands - we need to make a policy recommendation to move forward.

→ Dan Turner:

- Underscore statement of complexity - location, ownership, climate change, agency policy changes all contribute to the complexity. Urban perception of fire and appropriateness is part of the challenge. We need to engage the other components of scientist. We don't have any city planners involved in our conversation, on this assessment. They are part of the solution and we need to engage at that level not just focused on natural resources:
- One solution does not fit everywhere - for example, bringing fire back is only good in some locations and conditions.
- The risk is when we lose control of the tool. It is more than just the Resource management community.

→ Clay Brandow: after fire, there are opportunities to prepare for the next one. For example, on 'Old Fire' a house in a vulnerable location that was re-built in the same risky location.... We could have bought the property and not allowed rebuilding - we need some of these tools.

- SOCAL - 2007 fires carried through areas that would not normally have burned; under extreme conditions they still burn. Santa Ana winds.

→ Klaus Scott: Echo what Dan T. said. As an add-on to AB32 SB 375 regional planning needs to fold GHG emissions into land use decisions. This could be a good model for reaching out to local agencies.

→ Doug Wickizer: Policy/analysis mix comment: Decisions of policy need to be made based on local issues. Generalizations are not good policies. Make decisions to assessment areas at an appropriate scale.

→ Doug Wickizer - Policy/analysis mix comment:

- Decisions of policy need to be made based on local issues. Generalizations are not good policies. However, many of the tools are larger area tools - not as specific, perhaps as we need.
- Example: Fire-sheds are a good concept to move our tools down a scale to local areas. Policy moved forward. And many of these are not operating at this level. How can the fire science community provide policy makers a useable process to drive decisions to the local conditions and more appropriate actions - match decisions to assessment areas at an appropriate scale?

→ Scott Stephens - Fire Shed was a logical unit for fire and ecosystems decision making. You can be more prescriptive at this scale, but at the large area scale, the prescriptive policies are hard to make work.

- Fire Shed was for tactical planning to reduce hazards - was too early for its time.... The tools were not easy to use at the forest level and it became a specialty area. It was before it's time.

- Dave Sapsis: The process was very visual and allowed for agreement around a set of specific conditions. Those kinds of techniques are ahead of their time?

## V. Criteria and Indicators:

### Discussion led by Fraser Shilling:

#### Indicators:

- Regional and local scale use of indicators to track trends and progress, in the context of measured outcomes.
- Used to measure progress.
- Collaborative /Technical process.
- Broad range of issues.
- Has a value basis.
  - What is unacceptable when compared to what would be acceptable?

#### Tasks:

- Synthesis of existing indicator reporting systems in forest and rangeland management
  - Stakeholders. Outreach and indicator development
  - Indicator reporting template
  - Case study
  - Wildlife
  - Report and indicator workshop.
- Forest indicator systems review:
  - Previous assessments.
  - Montreal process
  - Oregon
  - USFS
  - Millennium ecosystem assessment
  - EPA report on the environment.
  - Other global indicators.
- How do we pare this down to a relevant, measureable set?
  - Criteria and indicators. Select these in a transparent process. This is different than how is usually done.
  - The evaluation principle is one of measuring progress toward a target and where we are relative to our goals.

- Two numeric targets must be set. Qualitative evaluation (undesired condition and a high/desired condition). These should be stated.
- There may be a linear, nonlinear, and binary relationship as needed between an indicator and a parameter state indicating a distance from a desired condition.
- Our role: provide input and feedback.
- Use case study to illustrate how indicators can be used.
- Identify data sources

#### Questions/Comments:

- Dave Sapsis question: Nexus with fire. Oregon example. Used a data set we don't have. Acres treated by treatment type and associated effectiveness. These are locally developed by many agencies and are hard to corral measuring success and documenting fuel hazard changes and effectiveness. We need to collect the right data to draw the right conclusions about treatments, costs, effectiveness and therefore sound policies and actions.
  - Fraser: This is not uncommon. We often have data gaps and thus we will bin these as proposed / desirable indicators.
  - Patterns: We are good at measuring these. But not at a Rate process.
- Dave Bakke Question: regarding indicators process. Compare to 2010 assessment-strategies identified how we would address these. We identified some indicators of performance... are we re-inventing the wheel?
- Jim S.: Data development for indicators... needs to be done by 2015. What data are we going to want, and how will we get them.
- One criterion for selecting an indicator is if data are available.
- FRAP will continue with the seven criteria of the Montreal process. Indicators will be nested under these.

## VI. Recap

- Chris Keithley: Thanked panel and attendees for the thoughtful wildfire discussion including the following:
  - Differences in fire pattern by ownership and predictability based on temperature.
  - What type of regional reporting would be appropriate? Ecological Unit?
  - Discussion of what will help realistically represent fire variability and severity.
  - Role of severity and landscape patterns. Can we document extent of high severity fires?
  - Would like to look and map fire severity in the future.
  - Counter to comments about fuel treatment data collection. CA has made improvements and USFS has good data too.
  - May support some indicators that were not possible last time
  - Good discussion on climate change and the climate fire relationship.

- Jon pointed out only loose predictability by temp.
- Last assessment didn't use downscale models for fire risk or behavior and we may be able to work on that. Interested in using historical info better.
- What type of data would we draw on for this?
- Next - good discussion on zoning and policies related to defensible space issues.
- We can and have put effort into this area and will work to identify recommendations through this.
- CAL FIRE's Fire Plan has a role to play in addressing good actions.
- Community engagement: advances in outreach and communication to public is a priority and we will continue to look at efforts of the public.